

# EXECUTIVE SUMMARY

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This Levee System Integrity Program Plan outlines a long-term strategy to reduce the risk to land use and associated economic activities, water supply, infrastructure, and ecosystem from catastrophic breaching of Delta levees. To achieve this and other CALFED objectives, in addition to meeting CALFED solution principles, Delta levees generally must remain in their current configuration.

The benefits of an improved Delta levee system include greater protection to Delta agricultural resources, municipalities, infrastructure, wildlife habitat, and water quality as well as navigation and conveyance benefits. The wide range of beneficiaries of the Delta Levee System Integrity Program (Levee Program) include Delta local agencies; land-owners; farmers; boaters; wildlife; and operators of railroads, state highways, utilities, and water distribution facilities. Delta water users and exporters also benefit from increased protection to water quality. Federal interests benefit from improvements to conveyance, navigation, commerce, and the environment and from reduced flood damage.

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This document formulates an effective strategy to achieve the Levee System Integrity Program objective and is indeed necessary to facilitate all CALFED objectives. The Levee System Integrity Program Plan would be implemented over a period of 30 or more years and cost approximately \$1.5 billion (1998 dollars).

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Recognizing these potential benefits, state and local agencies formed a partnership to reconstruct Delta levees. This effort has resulted in a steady improvement in the Delta levee system. The success of the Delta in the 1997 and 1998 flood events illustrates the value of approximately \$100 million of improvements made with Senate Bill (SB) 34 funds and over \$10 million in emergency Public Law (PL) 84-99 work performed by the U.S. Army Corps of Engineers (Corps). These funds, in addition to local funds, have resulted in over \$160 million in improvements to Delta levees since the SB 34 program's inception in 1988.

Over the past 10 years, staff from the California Department of Water Resources (DWR), California Department of Fish and Game (DFG), and many local agencies have worked together to successfully implement the existing levee program under SB 34 and Assembly Bill (AB) 360. In addition to managing over \$100 million in levee funds, SB 34 and AB 360 program staff have developed and implemented three supply depots in the Delta for quick deployment of emergency materials, developed and began implementation of 32,000 lineal feet of new wildlife habitat, advanced subsidence control including new levee designs and monitoring techniques, coordinated beneficial reuse of dredged material projects, and continued to advance solutions to the numerous complexities related to flood control and



habitat creation in the Delta's environmentally sensitive ecosystem. These efforts represent a positive first step in meeting the long-term CALFED objectives.

However, much more remains to be done, including:

- Improving levees to a higher standard,
- Developing adequate and reliable funding,
- Addressing permit and economic issues to enable expanded dredging and beneficial reuse of dredged material,
- Further improving existing emergency response capabilities,
- Reducing conflicts between levee maintenance and terrestrial and aquatic habitat resources on levees,
- Improving permit coordination,
- Incorporating subsidence control, and
- Continuing to quantify risks to levees and implementing appropriate risk management strategies.

CALFED provides a unique opportunity for federal, state, and local agencies to jointly address these needs. Existing Delta levee system problems and solution strategies proposed by CALFED are outlined below.

**Many Delta levees do not provide a level of flood protection commensurate with the high value of beneficial uses they protect.** As mandated by the California State Legislature and adopted by CALFED, the physical characteristics of the Delta should be preserved essentially in their present form. This is necessary to protect the beneficial uses of the Delta. The key to preserving the Delta's physical characteristics and to achieving CALFED's objectives is the levee system. Over the next 30 or more years, CALFED will invest billions of dollars in the Delta. The levees must protect this investment.

The existing levee program was intended to improve Delta levees up to the California/Federal Emergency Management Agency (FEMA) Hazard Mitigation Plan (HMP) standard. As of January 1998, 36 of 62 (58%) Delta islands and tracts were in compliance with the HMP standard. This has resulted in a significant improvement in the ability to protect the beneficial uses of the Delta. However, as CALFED invests in the Delta, more is at risk. Therefore, CALFED has chosen to improve Delta levees to a higher level.

The CALFED Levee Program will institute a program that is cost-shared among the beneficial users, to reconstruct Delta levees to the Corps' PL 84-99 Delta Specific Standard. This action will increase levee reliability and reduce emergency repair costs. In addition, levee districts meeting this levee standard are eligible for federal emergency assistance under PL 84-99.

The CALFED Levee Program also will continue the existing Special Flood Control Projects effort to provide additional flood protection for key Delta levees that protect public benefits of statewide significance.

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**Funding for levee work is insufficient, inconsistent, and often delayed.** Under the existing State levee programs, local agencies finance projects in anticipation of reimbursements. The Delta Levees Maintenance Subventions Program (Subventions Program) annually distributes available state funds on an equal basis to all participants as approved by The Reclamation Board. Each fiscal year, districts are notified of the available funding but cannot be sure what their final reimbursement will be until all claims are received and processed. The Delta Levees Special Project Program (Special Projects Program) receives applications and enters into agreements with participants to fund specific projects. Projects eligible for funding must be in accordance with priorities approved by the California Water Commission. Once projects are deemed eligible, agreements are executed and districts can receive payments as work progresses. The lack of adequate and consistent appropriations in the Subventions and Special Projects Programs poses a challenge for local agencies to complete planned rehabilitation projects.

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Many districts have experienced difficulty in rebounding from the long-term financial debt that was incurred while they waited for resolution of the 1980-1986 state and federal disaster assistance claims. The more recent 1995, 1997, and 1998 floods also have strained local financial resources. The overall financial health of these districts have significantly affected their ability to maintain their levee systems and limited their ability to upgrade their levees to a long-term levee standard. The Levee Program will secure federal cost sharing for Levee Program actions. The Corps' "Sacramento-San Joaquin Delta Special Study" could be used to establish a federal authority and subsequent federal funding. The Levee Program will establish consistent adequate funding for the Subventions and Special Projects Programs that will enable districts to plan and finance their work with greater certainty of reimbursement.

**Dredging to increase channel capacity and to provide material for levee reconstruction, habitat restoration and creation, and subsidence control has been curtailed due to regulatory constraints, causing dredging equipment and trained manpower to leave the Delta.** Regulatory agencies limit dredging in the Delta due to water quality and endangered species concerns. The dredged material can be relocated to suitable habitat development sites such as in-channel islands, waterside berms, or on-island areas, configured with different topographic features, and planted with selected vegetation to produce and/or improve diverse habitat types. Because insufficient data are available to quantify impacts and establish acceptable dredging criteria, the agencies regulate dredging activities more conservatively. Lack of a General Order for Waste Discharge Requirements (WDRs) complicates the permitting process.

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CALFED will work with the Regional Water Quality Control Board (RWQCB) and the Corps to develop a Regional Dredged Material Management Plan and General Order for WDRs.

**Existing emergency response capabilities need to be continuously refined and funding increased.** The existing emergency response system has significantly improved over the past several years. The State Office of Emergency Services (OES) continues to work with other emergency response organizations, including DWR, local Delta agencies, counties, FEMA, and the Corps to improve the emergency response system. However, the system is limited by insufficient dedicated Delta funding. Command and control procedures also need to be continuously refined using adaptive management principles.

CALFED plans to build on the existing emergency response system. CALFED's Emergency Response Subteam determined that an effective Delta levee emergency response program should be concentrated in seven areas:

- Funding;
- Response by state and federal agencies;
- Availability of flood fight resources;
- Integrated response;
- Clarification of regulatory procedures;
- Clarification of program eligibility, inspection, documentation, auditing, and reimbursement procedures; and
- Dispute resolution.

**Levee reconstruction and maintenance sometimes conflicts with management of terrestrial and aquatic habitat resources on or around levees.** In general, vegetation on levees results in more difficult levee maintenance. Stakeholders have voiced concern that activities to control levee and channel vegetation are often delayed because of potential impacts on endangered species habitat. Because levee districts often keep vegetation off of levee slopes to avoid the need to contend with endangered species requirements, potential opportunities for quality habitat are lost. Better strategies are needed to allow quality habitat to flourish on or around levees without hampering levee maintenance and construction.

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CALFED will coordinate with state and local agencies to develop updated environmental baseline values. When reconstructing levees, mitigation and enhancement of existing habitat must be relocated outside the minimum section required for levee integrity (structural cross section) when possible. CALFED will work to establish a conservation strategy that encourages levee managers to allow critical habitat to grow on levees while giving assurances that levee managers will be able to maintain their levees.

**Obtaining permits for levee work can be difficult and time consuming.** Historically, obtaining permits for levee work has been difficult. In 1996, the California Department of Fish and Game (DFG) assumed a more active role in assisting levee districts with the regulatory process. This participation is a significant improvement and should continue. However, other regulatory agencies often lack sufficient resources to issue permits without delays. In addition, disagreements often exist between regulatory agencies with overlapping jurisdiction. A more efficient permit coordination process is needed.

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To ensure successful implementation of all CALFED programs, a coordinated permit process will be established. The process will anticipate the numerous permit requirements for actions approved as part of CALFED. Coordinated permitting will not relax permitting requirements but will include information sharing among regulatory agencies to coordinate the permitting process. The permit coordination process also would be designed to address broad issues in order to improve the efficiency of such processes as general and regional permits, mitigation banks, and habitat improvement areas.

**Subsidence of portions of some Delta islands threatens levee integrity.** Subsidence near some levees in the Delta may adversely affect levee integrity. The Subsidence Subteam considers that subsidence can be corrected and levee integrity assured. However, a grant program is recommended to develop new methods that are more effective and less intrusive to current land use.

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**Seismic loading threatens Delta levees.** Some CALFED stakeholders are concerned that earthquakes may pose a catastrophic threat to Delta levees, that seismic forces could cause multiple levee failures in a short time, and that such a catastrophe could overwhelm the current emergency response system.

CALFED agrees that earthquakes pose a potential threat. In addition, Delta levees are at risk from floods, seepage, subsidence, and other threats. To address this concern, CALFED has begun a risk assessment to quantify these risks and develop a risk management strategy.

Over the past year, the Seismic Risk Assessment Subteam quantified the seismic risk to Delta levees. CALFED is continuing its risk assessment of floods, seepage, subsidence, and other threats.

Several risk management options have been developed for inclusion in the CALFED Preferred Program Alternative. The available risk management options include, but are not limited to:

- Improving emergency response capabilities,
- Reducing the fragility of the levees,
- Improving through-Delta conveyance,
- Constructing an isolated facility,
- Developing storage south of the Delta,
- Releasing more water stored north of the Delta,
- Restoring tidal wetlands,
- Controlling and reversing island subsidence,
- Curtailing Delta diversions, and
- Continuing to monitor and analyze total risk.

The final Risk Management Plan may include a combination of these options.

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